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TO: Examiner CHANNAVAJJALA, **FAX NO.:** 571-273-8300
Srirama

USPTO GPAU 2166

FROM: Jeffrey G. Toler
Reg. No.: 38,342

RE U.S. App. No.: 10/607,811, filed June 27, 2003

Applicant(s): Richard O. Slackman

Atty Dkt No.: 1033-SS00382

Title: RANK-BASED ESTIMATE OF RELEVANCE VALUES

NO. OF PAGES (including Cover Sheet): 33

MESSAGE:

Attached please find:

- ☒ Transmittal Form (1 pg)
- ☒ Fee Transmittal (in duplicate) (2 pgs)
- ☒ Brief in Support of Appeal (29 pgs)

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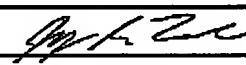
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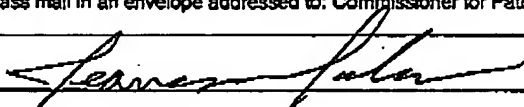
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/607,811	
	Filing Date	June 27, 2003	
	First Named Inventor	Richard O. Slackman	
	Art Unit	2166	
	Examiner Name	CHANNAVAJALA, Srirama	
Total Number of Pages in This Submission	32	Attorney Docket Number	1033-SS00382

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
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Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).**FEE TRANSMITTAL
For FY 2006**☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500.00

Complete if Known

Application Number	10/607,811
Filing Date	June 27, 2003
First Named Inventor	Richard O. Slackman
Examiner Name	CHANNAVAJALA, Srirama
Art Unit	2166
Attorney Docket No.	1033-SS00382

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FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims **Extra Claims** **Fee (\$)** **Fee Paid (\$)**

- 20 or HP = _____ x 50.00 = _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims **Extra Claims** **Fee (\$)** **Fee Paid (\$)**

- 3 or HP = _____ x 200.00 = _____

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3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____	_____	_____	_____	_____

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4. OTHER FEE(S)

	Fees Paid (\$)
Non-English Specification, \$130 fee (no small entity discount)	
Other (e.g., late filing surcharge): Brief In Support of Appeal Filing Fee	500.00

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 38,342	Telephone 512/327-5515
Name (Print/Type)	Jeffrey G. Toler	Date	10-24-2006

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Applicant(s): Richard O. Slackman

Title: RANK-BASED ESTIMATE OF RELEVANCE VALUES

App. No.: 10/607,811

Filed: June 27, 2003

Examiner: Channavajjala, Srirama

Group Art Unit: 2166

Atty. Dkt. No.: 1033-SS00382

Confirmation No.: 8389

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BRIEF IN SUPPORT OF APPEAL

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I. REAL PARTY IN INTEREST (37 C.F.R. § 41.37(c)(1)(i))

The Real Party in Interest in the present Appeal is **SBC Knowledge Ventures, L.P.**, the assignee, of patent application no. 10/607,811, as evidenced by the assignment set forth at Reel 014864, Frame 0010.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c)(1)(ii))

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, Appellant is not aware of any such appeals or interferences.

III. STATUS OF CLAIMS (37 C.F.R. § 41.37(c)(1)(iii))

A. Total Number of Claims in Application

There are 60 claims pending in the application (claims 1-60).

B. Status of All the Claims

Claims 1, 11, 14, 21, 31, 34, 41, 51, and 54 are independent claims. According to paragraphs 7-31 of the Final Office Action dated June 1, 2006 ("the Final Office Action"), the Examiner states that Claims 1-60 stand rejected, and are hereby appealed.

C. Claims on Appeal

There are 60 claims on appeal (claims 1-60).

IV. STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(1)(iv))

The claims hereby Appealed are based on the Amendment filed March 21, 2006. No amendment was offered or entered after the Final Office Action.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(1)(v))

The subject matter of Claim 1 can be summarized as follows:

A method is disclosed that includes receiving a ranked list of search results from a search engine based on a search query and estimating a relevance value of a particular search result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results.

Claim 1 finds support from at least Figures 2-4, page 2, paragraph 1008, and page 3, paragraph 1014 through page 9, paragraph 1036 of the specification.

The subject matter of Claim 11 can be summarized as follows:

A method of weighting search results from a search engine based on a search query is disclosed that includes determining a plurality of categories associated with the search query. The method further includes, for each of the categories, determining an associated category weighting value for the search engine, determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category, and determining a search engine weighting value based on the category weighting values and the first associated relevance values.

Claim 11 finds support from at least Figures 2-4, page 2, paragraph 1008, and page 3, paragraph 1014 through page 9, paragraph 1036 of the specification.

The subject matter of Claim 14 can be summarized as follows:

A method is disclosed that includes submitting a search query to a plurality of search engines, receiving, from each of the plurality of search engines, an associated ranked list of search results based on the search query, and receiving a plurality of actual relevance values for a plurality of the search results based on the search query. The method further includes, for at least one of the search results absent the actual relevance value, estimating its relevance value based on its rank, and the ranks and the actual relevance values of at least two others of the search results. The method also includes determining, for each of the plurality of search engines, an associated weighting value and determining, for each of the ranked lists, an associated weighted relevance value for each of its search results based on the estimated relevance value or the actual relevance value of the search result and the weighting value associated with the search engine that provided the ranked list. The method further includes combining the ranked lists into a single list and sorting the search results in the single list based on the associated weighted relevance values.

Claim 14 finds support from at least Figures 2-4, page 2, paragraphs 1008 and 1009, and page 3, paragraph 1014 through page 9, paragraph 1036 of the specification.

The subject matter of Claim 21 can be summarized as follows:

An apparatus is disclosed that includes a computer programmed to perform acts of receiving a ranked list of search results from a search engine based on a search query and of estimating a relevance value of a particular search result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results.

Claim 21 finds support from at least Figures 1-4, page 2, paragraphs 1008 and 1010-1012, and page 3, paragraph 1014 through page 9, paragraph 1036 of the specification.

The subject matter of claim 31 can be summarized as follows:

An apparatus for weighting search results from a search engine based on a search query is disclosed that includes a computer programmed to perform acts of determining a plurality of categories associated with the search query. The computer is further programmed to determine, for each of the categories, an associated category weighting value for the search engine and to determine a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category. The computer is further programmed to perform the act of determining a search engine weighting value based on the category weighting values and the first associated relevance values.

Claim 31 finds support from at least Figures 1-4, page 2, paragraph 1008 through page 9, paragraph 1036 of the specification.

The subject matter of claim 34 can be summarized as follows:

An apparatus is disclosed that includes a computer programmed to perform acts of submitting a search query to a plurality of search engines, receiving, from each of the plurality of search engines, an associated ranked list of search results based on the search query, and receiving a plurality of actual relevance values for a plurality of the search results based on the search query. The computer is further programmed to estimate, for at least one of the search results absent an actual relevance value, its relevance value based on its rank, and the ranks and the actual relevance values of at least two others of the search results, and to determine, for each of the plurality of search engines, an associated weighting value. The computer is further programmed to perform acts of determining, for each of the ranked lists, an associated weighted relevance value for each of its search results based on the estimated relevance value or the actual relevance value of the search result and the weighting value associated with the search engine that provided the ranked list, combining the ranked lists into a single list, and sorting the search results in the single list based on the associated weighted relevance values.

Claim 34 finds support from at least Figures 1-4, page 2, paragraph 1008 through page 9, paragraph 1036 of the specification.

The subject matter of claim 41 can be summarized as follows:

An article is disclosed that includes a computer-readable storage medium having computer-readable program code to cause a computer to perform acts of receiving a ranked list of search results from a search engine based on a search query and estimating a relevance value of a particular search result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results.

Claim 41 finds support from at least Figures 1-4, page 2, paragraph 1008 through page 9, paragraph 1036 of the specification.

The subject matter of claim 51 can be summarized as follows:

An article for weighting search results from a search engine based on a search query is disclosed that includes a computer-readable storage medium having computer-readable program code to cause a computer to perform acts of determining a plurality of categories associated with the search query and, for each of the categories, determining an associated category weighting value for the search engine. The computer-readable storage medium further includes computer-readable program code to cause a computer to determine a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category and to determine a search engine weighting value based on the category weighting values and the first associated relevance values.

Claim 51 finds support from at least Figures 1-4, page 2, paragraph 1008 through page 9, paragraph 1036 of the specification.

The subject matter of claim 54 can be summarized as follows:

An article is disclosed that includes a computer-readable storage medium having computer-readable program code to cause a computer to perform acts of submitting a search query to a plurality of search engines, receiving, from each of the search engines, an associated ranked list of search results based on the search query, and receiving a plurality of actual relevance values for a plurality of the search results based on the search query. The computer-readable storage medium further includes computer-readable program code to cause a computer to estimate, for at least one of the plurality of search results absent an actual relevance value, its relevance value based on its rank, and the ranks and the actual relevance values of at least two others of the search results, to determine, for each of the plurality of search engines, an associated weighting value, and to determine, for each of the ranked lists, an associated weighted relevance value for each of its search results based on the estimated relevance value or the actual relevance value of the search result and the weighting value associated with the search engine that provided the ranked list. The computer-readable storage medium further includes computer-readable program code to cause a computer to perform acts of combining the ranked lists into a single list and sorting the search results in the single list based on the associated weighted relevance values.

Claim 54 finds support from at least Figures 1-4, page 2, paragraph 1008 through page 9, paragraph 1036 of the specification.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

A. Claims 1, 5-8, 21, 25-28, 41, and 45-48 are rejected under 35 U.S.C. 102(e) as being anticipated over U.S. Patent No. 6,728,704 ("Mao") at page 2, paragraphs 7-12 of the Final Office Action.

B. Claims 2-4, 9-10, 22-24, 29-30, 42-44, and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao in view of U.S. Patent No. 5,870,740 ("Rose") at page 5, paragraphs 13-18 of the Final Office Action.

C. Claims 11-13, 31-33, and 51-53 are rejected under 35 U.S.C. 102(b) as being anticipated by of U.S. Patent Publication No. 2002/0078045 ("Dutta") at page 7, paragraphs 20-22 of the Final Office Action.

D. Claims 14-15, 17-20, 34-35, 37-40, 54-55, and 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao in view of Rose at page 9, paragraphs 23-29 of the Final Office Action.

E. Claims 16, 36, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao in view of Rose and further in view of Dutta at page 13, paragraphs 30-31 of the Final Office Action.

VII. ARGUMENT (37 C.F.R. § 41.37(c)(1)(vii))

Appellant respectfully appeals each of the rejections applied against all claims now pending on appeal.

A. CLAIMS 1, 5-8, 21, 25-28, 41, AND 45-48 ARE ALLOWABLE OVER MAO

Appellant respectfully traverses the rejection of claims 1, 5-8, 21, 25-28, 41 and 45-48 under 35 U.S.C. § 102(e) over U.S. Patent No. 6,728,704 ("Mao") at page 2, paragraphs 7-12 of the Final Office Action. Independent claims 1, 21 and 41 recite estimating a relevance value of a particular search result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results.

Mao discloses a method and apparatus for merging results lists from multiple search engines in a manner that seeks to avoid computational overhead associated with current methods. *See Mao*, col. 2, lines 57-60. Mao discloses that search engines are designed to receive a query, to search a group of networked computers for information related to the query, and to return a results list, which may include a ranking. *See Mao*, col. 1, lines 40-49. Mao discloses that results or entries in the results list may be ranked "with the goal of presenting the most relevant results to the user first." *See Mao*, col. 2, lines 8-11. Mao discloses that a meta-search engine merges results received from multiple computers into a single list, by examining and ranking every single entry. *See Mao*, col. 2, lines 48-51. Mao discloses that this merging process may be computationally intensive and undesirable. *See Mao*, col. 2, lines 48-56.

Mao discloses that, to reduce computational overhead, "lists are not merged based on an evaluation of every single entry." *Mao*, col. 5, lines 38-40. Mao discloses that lists are merged "based on an examination of only a small number of entries from each list." *Mao*, col. 5, lines 40-42. Mao discloses that a subset of entries is selected from each result list and a scoring value is determined for each entry in the subset. *See Mao*, col. 5, col. 44-56. Mao discloses that a scoring value may be determined for each entry by setting the scoring value equal to a total number of times each word in the query appears on the entry. *See Mao*, col. 5, lines 56-65. A representative score is then determined for each results list by determining an arithmetic average or a proportional value to the average for the set of scoring values. *See Mao*, col. 6, lines 1-5. Mao discloses that each list is given a representative list score based on the determined representative scores of all scoring values determined for its subset of entries. *See Mao*, col. 5, line 66 – col. 6, line 5. Mao discloses that the results lists are merged based on the representative list score for each list. *See Mao*, col. 6, lines 6-9. In a particular example, Mao discloses that each list is assigned a probability value, which can be used to merge multiple lists based on their respective probability values. *See Mao*, col. 6, lines 20-24. Mao states:

Once each result list has a representative value assigned to it, it is merged with the others accordingly.

Mao, col. 6, lines 8-10.

Thus, Mao discloses estimating a relevance value of a results list (not an actual result within the results list) based on, for example, an average scoring value of the selected subset of results for the result list. *See Mao*, col. 5, line 66-col. 6, line 3, and col. 7, lines 3-14. Mao fails to disclose or suggest estimating a relevance value of a particular search result in the ranked list, as recited by claims 1, 21, and 41. Moreover, in contrast to claims 1, 21, and 41, Mao estimates a relevance value by counting a number of times query terms appear in a subset of entries. *See Mao*, col. 5, lines 58-63. Mao fails to disclose or suggest estimating a relevance value of a particular result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results, as recited by claims 1, 21, and 41.

Thus, Mao fails to disclose or suggest at least one element of each of the claims 1, 21, and 41, and of claims 5-8, 25-28 and 45-48, at least by virtue of their dependency from one of claims 1, 21, and 41. The rejection of claims 1, 5-8, 21, 25-28, 41, and 45-48 should be withdrawn.

B. CLAIMS 2-4, 9-10, 22-24, 29-30, 42-44, AND 49-50 ARE ALLOWABLE OVER MAO IN VIEW OF ROSE

Appellant traverses the rejection of claims 2-4, 9-10, 22-24, 29-30, 42-44, and 49-50 under 35 U.S.C. 103(a) over Mao in view of U.S. Patent No. 5,870,740 ("Rose") at page 5, paragraphs 13-18 of the Final Office Action. Mao teaches away from the disclosure of Rose; therefore, there is no motivation to make the asserted combination.

As discussed above, Mao discloses that examining and ranking every single entry of every list is computationally intensive and can nullify any advantage gained by operating multiple search engines at the same time. *See Mao*, col.2, lines 48-56. In contrast, Rose discloses calculating the adjusted relevance value for each document result. *See Rose*, col. 7, lines 47-50. The subset calculations of Mao are technically inconsistent with and teach away from the "every document calculation" of Rose. Thus, there is no motivation to make the asserted combination. The combination of Mao with Rose is improper and should be withdrawn.

Additionally, even if the asserted combination were made, the combination of Mao and Rose fails to disclose or suggest at least one element of each of the claims. With regard to claims

2-4, 22-24, and 42-44, the Final Office Action acknowledges that Mao fails to disclose or suggest that estimating comprises fitting a curve, to represent relevance as a function of rank, to the actual relevance values and the ranks of the at least two others of the search results, as recited by claims 2, 22, and 42, from which claims 3-4, 23-24, and 43-44 depend. As previously discussed, Mao also fails to disclose or suggest estimating a relevance value of a particular result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results, as recited by independent claims 1, 21, and 41, from which claims 2-4, 9-10, 22-24, 29-30, 42-44 and 49-50 depend.

Further, Rose discloses that the raw relevance scores of the results list are adjusted, using equation 1 of Rose at col. 6, to produce an adjusted score that takes into account a count of query terms in each document and a number of words in a particular query. *See Rose*, col. 6, lines 1-39. Rose discloses that this equation scales relevance results for short queries. *See Rose*, col. 7, lines 11-30. Rose discloses that each document score is calculated based on the adjusted relevance ranking (s1). *See Rose*, col. 7, lines 47-50. The adjusted relevance ranking (s1) is based on the rank score of the retrieved document, a number of words in the query, and a coordination level of the retrieved document and the query. *See Rose*, col. 4, lines 55-67. Thus, the system of Rose calculates an adjusted score without regard for the relevance values and the ranks other entries of the search results, using the number of words in the query (q), the rank of the document (s), and a coordination value (v). In Rose, the coordination value (v) represents a degree of overlap between the query terms and terms within the retrieved document that may be determined by counting the number of terms (words) that are common between them. *See Rose*, col. 6, lines 19-24. In direct contrast, claims 2, 22, and 42 recite "wherein said estimating comprises fitting a curve, to represent relevance as a function of rank, to the actual relevance values and the ranks of the at least two others of the search results." Rose fails to disclose or suggest fitting a curve, to represent relevance as a function of rank, to the actual relevance values and ranks of the at least two others of the search results, as recited by claims 2, 22, and 42.

Moreover, Rose calculates the adjusted relevance value for each result, achieving a scaled list of documents without curve fitting. *See Rose*, col. 7, lines 47-50. Rose fails to disclose or suggest estimating a relevance value wherein estimating comprises fitting a curve, as recited by

claims 2, 22, and 42. Accordingly, the asserted combination of Mao and Rose fails to disclose or suggest at least one element of claims 2, 22 and 42, and of claims 3-4, 23-24 and 42-44, at least by virtue of their dependency from one of claims 2, 22 and 42.

With respect to claims 9, 29, and 49, Mao fails to disclose or suggest that the actual relevance values are not supplied by the search engine, as recited by claims 9, 29, and 49. The Final Office Action asserts that Rose discloses this feature, citing Rose at col. 7, lines 46-50. *See Final Office Action*, p. 6, paragraph 17. However, in the cited passage, Rose states:

Based on the adjusted relevance-ranking score s_1 determined by Eq. (1), each document score is calculated, and the retrieved documents are then outputted sequentially from the one with the highest score to the one with the lowest score.

Rose, col. 7, lines 46-50.

Moreover, Rose discloses equation 1 as follows:

$$s_1 f(s, v, q, \delta) = \left[s + \frac{(v-1)}{(q-\delta)^2} \right] x \frac{(q-1)}{q} B x \frac{(q-1)}{q},$$

where s_1 represents an adjusted score, s is a raw score (e.g. a relevance ranking algorithm score of a retrieved document), v is a coordination level, q is a number of words in the query, and δ is a value between zero and one to control an intensity of the coordination-influenced increase or boosting effect. *See Rose*, col. 5, line 58 to col. 6, line 63. Thus, the cited passage of Rose fails to disclose or suggest that actual relevance values are not supplied by the search engine, as suggested by the Final Office Action. In direct contrast, Rose teaches that the adjusted score equation (1) above uses the raw score (s). Moreover, Rose discloses that the received results list includes a value corresponding to a relevance-ranking algorithm score of a retrieved document (e.g. a raw score). *See Rose*, Abstract and col. 4, lines 55-59. Thus, neither Mao nor Rose disclose or suggest a method where the actual relevance values are not supplied by the search engine, as recited by claims 9, 29 and 49. Thus, the asserted combination of Mao and Rose fails to disclose or suggest at least one element of claims 9, 29, and 49.

With respect to claims 10, 30 and 50, the Final Office Action cites to Mao at col. 6, lines 20-24 as disclosing "wherein said estimating comprises linearly interpolating between the first actual relevance value and the second actual relevance value," as recited in claims 10, 30 and 50. However, the cited passage of Mao actually states:

Each list is assigned a probability value equal to its representative value's percentage of the total representative values for all lists. Lists are then selected according to their probability value, with lists having higher probability values being more likely to be selected.

Mao, col. 6, lines 20-24.

The assignment of probability values in Mao does not require interpolation and does not equate to linearly interpolating between the first actual relevance value and the second actual relevance value, as recited in claims 10, 30 and 50. The present application states:

In one embodiment, an unknown relevance value of a search result is estimated by linearly interpolating between two known relevance values whose ranks bracket (i.e. one rank is greater than, another rank is less than) the rank of the search result. Non-linear interpolation functions are also contemplated.

See Application, paragraph 1022.

In Mao, each list is assigned a probability value. *See Mao*, col. 6, lines 20-22. Mao fails to disclose or suggest linearly interpolating between a first relevance value and a second relevance value, as recited by claims 10, 30, and 50. Rose also fails to disclose or suggest linear interpolation. Instead, Rose calculates an adjusted score for each item in a results list using a non-linear equation. *See Rose*, col. 6, equation 1, and col. 5, line 66 through col. 6, line 63. Thus, the asserted combination of Mao and Rose fails to disclose or suggest at least one element of claims 10, 30 and 50. Therefore, the rejection of claims 2-4, 9-10, 22-24, 29-30, 42-44, and 49-50 over Mao and Rose should be withdrawn.

C. CLAIMS 11-13, 31-33, AND 51-53 ARE ALLOWABLE OVER DUTTA

Appellant respectfully traverses the rejection of claims 11-13, 31-33 and 51-53 under 35 U.S.C. § 102(b) over U.S. Patent Application Publication No. 2002/0078045 ("Dutta") at page 7,

paragraphs 20-22 of the Final Office Action. Claims 11, 31 and 51 recite determining a search engine weighting value based on a category of weighting values and first associated relevance values.

Dutta discloses a search engine that attempts to identify a user with a user category. *See Dutta*, p. 5, paragraph 0038. The user category is determined based on a user profile. *See Dutta*, p. 5, paragraph 0038. The search results list "may be returned to the user upon ranking search results in accordance with a user category." *See Dutta*, p. 7, paragraph 0046. Moreover, Dutta discloses that the user categories may be defined by the developers of the search engine server. *See Dutta*, p. 5, paragraph 0039. The user category of Dutta is associated with the user, and not with the search results. In direct contrast, claims 11, 31 and 51 recite determining a plurality of categories associated with a search query. (emphasis added). Dutta fails to disclose or suggest determining a plurality of categories associated with a search query, as recited by claims 11, 31 and 51.

Moreover, Dutta discloses a system in which search results obtained by a search engine server may be ranked by associating user category weights with each file indexed in a search database. *See Dutta*, Abstract. Dutta discloses weighting individual documents according to a "meta tag identifier, which may be embedded in the file" or based on a compiled history of user interactions with files and websites to adjust the popularity of such documents based on their popularity with the groups of users. *See Dutta*, pp. 8-9, paragraphs 0048 and 0051. Thus, Dutta discloses weighting individual documents or websites, not search engines. Dutta fails to disclose or suggest determining a search engine weighting value based on the category of weighting values and the first associated relevance values, as recited by independent claims 11, 31, and 51. Accordingly, Dutta fails to disclose or suggest at least one element of claims 11, 31, and 51 and of claims 12-13, 32-33, and 52-53 at least by virtue of their dependency from one of the independent claims 11, 31, and 51.

D. CLAIMS 14-15, 17-20, 34-35, 37-40, 54-55, AND 57-60 ARE ALLOWABLE OVER MAO AND ROSE

Appellant respectfully traverses the rejection of claims 14-15, 17-20, 34-35, 37-40, 54-55, and 57-60 under 35 U.S.C. § 103(a) over Mao in view of Rose at page 9, paragraphs 23-29 of

the Final Office Action. The Final Office Action acknowledges that Mao fails to disclose determining, for each of the search engines, an associated weighting value, as recited by independent claims 14, 34, and 54. The Final Office Action asserts that Rose discloses this feature at col. 2, lines 29-32 and col. 3, lines 1-6. Rose states:

Every document in the collection is then assigned a vector of weights, based on various weighting methods such as TFxIDF [term frequency divided by the number of documents containing the term] weighting and weighting that takes TFxIDF and a length normalization statistic into account.

Rose, col. 2, lines 29-32.

Rose further states:

World Wide Web search services (Lycos, InfoSeek, Excite, and AltaVista) present users with an entry field that accepts less than one line of text. The statistical methods that provide relevance-ranking, such as "TFxIDF weighting" with the cosine similarity metric, attempt to "reward" documents that are well-characterized by each query term.

Rose, col. 3, lines 1-6.

The cited passages of Rose disclose weighting individual documents, not search engines. Thus, Rose fails to disclose or suggest determining, for each of the plurality of search engines, an associated weighting value, as recited by claims 14, 34 and 54. Accordingly, the asserted combination of Mao and Rose fail to disclose or suggest at least one element of claims 14, 34, and 54 and of claims 15, 17-20, 35, 37-40, 55, and 57-60, at least by virtue of their dependency from one of the allowable claims 14, 34 and 54.

E. CLAIMS 16, 36, AND 56 ARE ALLOWABLE OVER MAO, ROSE AND DUTTA

Appellant traverses the rejection of claims 16, 36 and 56 under 35 U.S.C. §103(a) over Mao, Rose and Dutta at page 13, paragraphs 30-31 of the Final Office Action. The Final Office acknowledges that Mao and Rose fail to disclose or suggest determining a plurality of categories associated with the search query, as recited by claims 16, 36 and 56. The Final Office Action asserts that Dutta discloses this feature. However, Dutta discloses a search engine that attempts

to identify a user with a user category. *See Dutta*, p. 5, paragraph 0038. The user category is determined based on a user profile. *See Dutta*, p. 5, paragraph 0038. The search results list “may be returned to the user upon ranking search results in accordance with a user category.” *See Dutta*, p. 7, paragraph 0046. Moreover, Dutta discloses that the user categories may be defined by the developers of the search engine server. *See Dutta*, p. 5, paragraph 0039. The user category of Dutta is associated with the user, and not with the search results. In direct contrast, claims 16, 36, and 56 recite determining a plurality of categories associated with a search query. (emphasis added). Dutta fails to disclose or suggest determining a plurality of categories associated with a search query, as recited by claims 16, 36 and 56. Thus, the asserted combination of Mao, Rose and Dutta fails to disclose or suggest determining a plurality of categories associated with a search query, as recited by claims 16, 36 and 56.

For at least the foregoing reasons, Appellant respectfully submits that the present application is in condition for allowance and reconsideration is respectfully requested.

VIII. CLAIMS APPENDIX (37 C.F.R. § 41.37(c)(1)(viii))

The text of each claim involved in the appeal is as follows:

1. (Original) A method comprising:
receiving a ranked list of search results from a search engine based on a search query; and
estimating a relevance value of a particular search result in the ranked list based on its
rank and actual relevance values and ranks of at least two others of the search
results.
2. (Original) The method of claim 1 wherein said estimating comprises fitting a curve, to
represent relevance as a function of rank, to the actual relevance values and the ranks of the at
least two others of the search results.
3. (Original) The method of claim 2 wherein said estimating further comprises evaluating the
curve at the rank of the particular search result to estimate the relevance value.
4. (Original) The method of claim 3 wherein the curve is a line.
5. (Original) The method of claim 1 wherein said estimating comprises determining an
interpolation function, to represent relevance as a function of rank, for the actual relevance
values and the ranks of the at least two others of the search results.
6. (Original) The method of claim 5 wherein said estimating further comprises evaluating the
interpolation function at the rank of the particular search result to estimate the relevance value.
7. (Original) The method of claim 1 wherein said estimating comprises linearly interpolating
between two actual relevance values whose ranks bracket the rank of the particular search result.
8. (Original) The method of claim 1 wherein the actual relevance values are supplied by the
search engine.

9. (Original) The method of claim 1 wherein the actual relevance values are not supplied by the search engine.

10. (Original) The method of claim 9 further comprising:

determining a first actual relevance value for a most-relevant one of the search results;

and

determining a second actual relevance value for a least-relevant one of the search results;

wherein said estimating comprises linearly interpolating between the first actual relevance value and the second actual relevance value.

11. (Previously Presented) A method of weighting search results from a search engine based on a search query, the method comprising:

determining a plurality of categories associated with the search query;

for each of the categories, determining an associated category weighting value for the search engine;

determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category; and

determining a search engine weighting value based on the category weighting values and the first associated relevance values.

12. (Original) The method of claim 11 further comprising:

determining a second associated relevance value for each of the categories by dividing its first associated relevance value by a sum of all of the first associated relevance values.

13. (Previously Presented) The method of claim 12 wherein said determining the search engine weighting value comprises determining the search engine weighting value based on a sum, over the categories, of each product of the associated category weighting value and the second associated relevance value.

14. (Original) A method comprising:

submitting a search query to a plurality of search engines;
receiving, from each of the plurality of search engines, an associated ranked list of search results based on the search query;
receiving a plurality of actual relevance values for a plurality of the search results based on the search query;
for at least one of the search results absent the actual relevance value, estimating its relevance value based on its rank, and the ranks and the actual relevance values of at least two others of the search results;
determining, for each of the plurality of search engines, an associated weighting value;
determining, for each of the ranked lists, an associated weighted relevance value for each of its search results based on the estimated relevance value or the actual relevance value of the search result and the weighting value associated with the search engine that provided the ranked list;
combining the ranked lists into a single list; and
sorting the search results in the single list based on the associated weighted relevance values.

15. (Original) The method of claim 14 wherein the actual values comprise normalized, search-engine-supplied relevance values.

16. (Original) The method of claim 14 wherein said determining the associated weighting value for a search engine comprises:

- determining a plurality of categories associated with the search query;
- determining an associated category search engine weighting value for each of the categories;
- determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category;
- determining a second associated relevance value for each of the categories by dividing its first associated relevance value by a sum of all first associated relevance values; and
- determining the associated weighting value based on a sum, over the categories, of each product of the associated category search engine weighting value and the second associated relevance value.

17. (Original) The method of claim 14 wherein said estimating comprises:

- fitting a curve, to represent relevance as a function of rank, to the actual relevance values and the ranks of the at least two others of the search results; and
- evaluating the curve at the rank of the particular search result to estimate the relevance value.

18. (Original) The method of claim 14 wherein said estimating comprises:

- determining an interpolation function, to represent relevance as a function of rank, for the actual relevance values and the ranks of the at least two others of the search results; and
- evaluating the interpolation function at the rank of the particular search result to estimate the relevance value.

19. (Original) The method of claim 14 wherein the actual relevance values are search-engine-supplied.

20. (Original) The method of claim 14 wherein the actual relevance values are not search-engine-supplied.

21. (Original) An apparatus comprising:

a computer programmed to perform acts of:

receiving a ranked list of search results from a search engine based on a search query; and
estimating a relevance value of a particular search result in the ranked list based on its
rank and actual relevance values and ranks of at least two others of the search
results.

22. (Original) The apparatus of claim 21 wherein said estimating comprises fitting a curve, to
represent relevance as a function of rank, to the actual relevance values and the ranks of the at
least two others of the search results.

23. (Original) The apparatus of claim 22 wherein said estimating further comprises evaluating
the curve at the rank of the particular search result to estimate the relevance value.

24. (Original) The apparatus of claim 23 wherein the curve is a line.

25. (Original) The apparatus of claim 21 wherein said estimating comprises determining an
interpolation function, to represent relevance as a function of rank, for the actual relevance
values and the ranks of the at least two others of the search results.

26. (Original) The apparatus of claim 25 wherein said estimating further comprises evaluating
the interpolation function at the rank of the particular search result to estimate the relevance
value.

27. (Original) The apparatus of claim 21 wherein said estimating comprises linearly interpolating
between two actual relevance values whose ranks bracket the rank of the particular search result.

28. (Original) The apparatus of claim 21 wherein the actual relevance values are supplied by the
search engine.

29. (Original) The apparatus of claim 21 wherein the actual relevance values are not supplied by the search engine.

30. (Original) The apparatus of claim 29 wherein the computer is programmed to perform further acts of:

determining a first actual relevance value for a most-relevant one of the search results;

and

determining a second actual relevance value for a least-relevant one of the search results;

wherein said estimating comprises linearly interpolating between the first actual relevance value and the second actual relevance value.

31. (Previously Presented) An apparatus for weighting search results from a search engine based on a search query, the apparatus comprising:

a computer programmed to perform acts of:

determining a plurality of categories associated with the search query;

for each of the categories, determining an associated category weighting value for the search engine;

determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category; and

determining a search engine weighting value based on the category weighting values and the first associated relevance values.

32. (Original) The apparatus of claim 31 wherein the computer is programmed to perform a further act of:

determining a second associated relevance value for each of the categories by dividing its first associated relevance value by a sum of the first associated relevance values.

33. (Previously Presented) The apparatus of claim 32 wherein said determining the search engine weighting value comprises determining the search engine weighting value based on a sum, over the categories, of each product of the associated category weighting value and the second associated relevance value.

34. (Original) An apparatus comprising:

a computer programmed to perform acts of:
submitting a search query to a plurality of search engines;
receiving, from each of the plurality of search engines, an associated ranked list of search results based on the search query;
receiving a plurality of actual relevance values for a plurality of the search results based on the search query;
for at least one of the search results absent an actual relevance value, estimating its relevance value based on its rank, and the ranks and the actual relevance values of at least two others of the search results;
determining, for each of the plurality of search engines, an associated weighting value;
determining, for each of the ranked lists, an associated weighted relevance value for each of its search results based on the estimated relevance value or the actual relevance value of the search result and the weighting value associated with the search engine that provided the ranked list;
combining the ranked lists into a single list; and
sorting the search results in the single list based on the associated weighted relevance values.

35. (Original) The apparatus of claim 34 wherein the actual values comprise normalized, search-engine-supplied relevance values.

36. (Original) The apparatus of claim 34 wherein said determining the associated weighting value for a search engine comprises:

- determining a plurality of categories associated with the search query;
- determining an associated category search engine weighting value for each of the categories;
- determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category;
- determining a second associated relevance value for each of the categories by dividing its first associated relevance value by a sum of all first associated relevance values; and
- determining the associated weighting value based on a sum, over the categories, of each product of the associated category search engine weighting value and the second associated relevance value.

37. (Original) The apparatus of claim 34 wherein said estimating comprises:

- fitting a curve, to represent relevance as a function of rank, to the actual relevance values and the ranks of the at least two others of the search results; and
- evaluating the curve at the rank of the particular search result to estimate the relevance value.

38. (Original) The apparatus of claim 34 wherein said estimating comprises:

- determining an interpolation function, to represent relevance as a function of rank, for the actual relevance values and the ranks of the at least two others of the search results; and
- evaluating the interpolation function at the rank of the particular search result to estimate the relevance value.

39. (Original) The apparatus of claim 34 wherein the actual relevance values are search-engine-supplied.

40. (Original) The apparatus of claim 34 wherein the actual relevance values are not search-engine-supplied.

41. (Previously Presented) An article comprising:

a computer-readable storage medium having computer-readable program code to cause a computer to perform acts of:

receiving a ranked list of search results from a search engine based on a search query; and
estimating a relevance value of a particular search result in the ranked list based on its rank and actual relevance values and ranks of at least two others of the search results.

42. (Original) The article of claim 41 wherein said estimating comprises fitting a curve, to represent relevance as a function of rank, to the actual relevance values and the ranks of the at least two others of the search results.

43. (Original) The article of claim 42 wherein said estimating further comprises evaluating the curve at the rank of the particular search result to estimate the relevance value.

44. (Original) The article of claim 43 wherein the curve is a line.

45. (Original) The article of claim 41 wherein said estimating comprises determining an interpolation function, to represent relevance as a function of rank, for the actual relevance values and the ranks of the at least two others of the search results.

46. (Original) The article of claim 45 wherein said estimating further comprises evaluating the interpolation function at the rank of the particular search result to estimate the relevance value.

47. (Original) The article of claim 41 wherein said estimating comprises linearly interpolating between two actual relevance values whose ranks bracket the rank of the particular search result.

48. (Original) The article of claim 41 wherein the actual relevance values are supplied by the search engine.

49. (Original) The article of claim 41 wherein the actual relevance values are not supplied by the search engine.

50. (Original) The article of claim 49 wherein the computer-readable program code further causes the computer to perform acts of:

determining a first actual relevance value for a most-relevant one of the search results;

and

determining a second actual relevance value for a least-relevant one of the search results;

wherein said estimating comprises linearly interpolating between the first actual relevance value and the second actual relevance value.

51. (Previously Presented) An article for weighting search results from a search engine based on a search query, the article comprising:

a computer-readable storage medium having computer-readable program code to cause a computer to perform acts of:

determining a plurality of categories associated with the search query;

for each of the categories, determining an associated category weighting value for the search engine;

determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category; and

determining a search engine weighting value based on the category weighting values and the first associated relevance values.

52. (Original) The article of claim 51 wherein the computer-readable program code further causes the computer to perform an act of:

determining a second associated relevance value for each of the categories by dividing its first associated relevance value by a sum of all first associated relevance values.

53. (Previously Presented) The article of claim 52 wherein said determining the search engine weighting value comprises determining the search engine weighting value based on a sum, over the categories, of each product of the associated category weighting value and the second associated relevance value.

54. (Previously Presented) An article comprising:

a computer-readable storage medium having computer-readable program code to cause a computer to perform acts of:

- submitting a search query to a plurality of search engines;
- receiving, from each of the search engines, an associated ranked list of search results based on the search query;
- receiving a plurality of actual relevance values for a plurality of the search results based on the search query;
- for at least one of the plurality of search results absent an actual relevance value, estimating its relevance value based on its rank, and the ranks and the actual relevance values of at least two others of the search results;
- determining, for each of the plurality of search engines, an associated weighting value;
- determining, for each of the ranked lists, an associated weighted relevance value for each of its search results based on the estimated relevance value or the actual relevance value of the search result and the weighting value associated with the search engine that provided the ranked list;
- combining the ranked lists into a single list; and
- sorting the search results in the single list based on the associated weighted relevance values.

55. (Original) The article of claim 54 wherein the actual relevance values comprise normalized, search-engine-supplied relevance values.

56. (Original) The article of claim 54 wherein said determining the associated weighting value for a search engine comprises:

- determining a plurality of categories associated with the search query;
- determining an associated category search engine weighting value for each of the categories;
- determining a first associated relevance value for each of the categories based on the search query and one or more query terms associated with the category;
- determining a second associated relevance value for each of the categories by dividing its first associated relevance value by a sum of all first associated relevance values;
- and
- determining the associated weighting value based on a sum, over the categories, of each product of the associated category search engine weighting value and the second associated relevance value.

57. (Original) The article of claim 54 wherein said estimating comprises:

- fitting a curve, to represent relevance as a function of rank, to the actual relevance values and the ranks of the at least two others of the search results; and
- evaluating the curve at the rank of the particular search result to estimate the relevance value.

58. (Original) The article of claim 54 wherein said estimating comprises:

- determining an interpolation function, to represent relevance as a function of rank, for the actual relevance values and the ranks of the at least two others of the search results; and
- evaluating the interpolation function at the rank of the particular search result to estimate the relevance value.

59. (Original) The article of claim 54 wherein the actual relevance values are search-engine-supplied.

60. (Original) The article of claim 54 wherein the actual relevance values are not search-engine-supplied.

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IX. EVIDENCE APPENDIX (37 C.F.R. § 41.37(c)(1)(ix))

(N/A)

X. RELATED PROCEEDINGS APPENDIX (37 C.F.R. § 41.37(c)(1)(x))

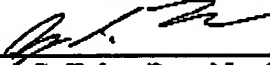
(N/A)

XI. CONCLUSION

For at least the above reasons, all pending claims are allowable and a notice of allowance is courteously solicited. Please direct any questions or comments to the undersigned attorney at the address indicated. Appellant respectfully requests reconsideration and allowance of all claims and that this patent application be passed to issue.

Respectfully submitted,

10-24-2006
Date


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